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RUBBER RESERVE COMPANY
Minutes
Subcommittee on Plant Effluent of the
Operating Committee of Rubber Reserve Company
THIRD MEETING

Date: November 29, 1944

Time: 9:20 A.M. to 4:50 P.M.

Place: Rice Hotel, Houston, Texas

note
12/29

Attendance

Members Present

Ludwig Meuser, Chairman
W. F. Bixby
C. A. Brown
J. H. Pahl
J. W. Sergeant
W. H. Watson
J.C.H. Wendes
L. A. Moerner
R. E. Rostenbach, Secretary

Rubber Reserve Company
B. F. Goodrich Company
General Tire & Rubber Company
National Synthetic Rubber Corp.
Copolymer Corporation
Canadian Synthetic Rubber Ltd.
U. S. Rubber Company
Goodyear Synthetic Rubber Corp.
Rubber Reserve Company

Members Absent

J. C. Crawford
W. C. Warner

Blaw-Knox Company
Firestone Tire and Rubber Co.

Visitors

R. F. Dimmitt
R. V. Plummer

Rubber Reserve Company

G. L. Bruggemeier
B. K. Lyckberg
W. A. Wilson

Firestone Tire & Rubber Co.

F. V. Morrison

B. F. Goodrich Company

G. I. Gay
J. K. Lockridge

Goodyear Synthetic Rubber
Corporation

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G. R. Vila	U. S. Rubber Company
G. E. Kopetz	Blaw-Knox Company
E. L. Niederhofer	
E. Werner	
Scott Keith	Metcalf & Eddy

Mr. J. W. Sergeant, Copolymer Corporation, and Mr. W. H. Watson, Canadian Synthetic Rubber Ltd. were introduced by Mr. Meuser as new members of the Subcommittee replacing Mr. R. A. Gerlicher, Copolymer Corporation and Mr. C. H. Madsen, Canadian Synthetic Rubber Ltd.

The minutes of the second meeting were corrected as follows:

Mr. Werner stated that on page 8, section 4, "Goodyear Synthetic Rubber Corporation, Akron", first line should read "storm" instead of "sanitary" and that on page 9, "Discussions Concerning Disposal of TBC" second paragraph, first line should read "Goodyear" instead of "Goodrich".

Mr. Brown stated that on page 9, "Discussions Concerning Disposal of TBC, second paragraph, line six should read "is considering the" instead of "has permission to" and line eight should read "state" instead of "municipal".

The "List of Comments on Minutes of Second Meeting of Subcommittee on Plant Effluent", attached to Mr. Bixby's letter of November 25, 1944, to Mr. Meuser is made a part of the minutes.

"List of Comments on Minutes of
Second Meeting of Subcommittee on Plant Effluent

a) Pages 2 and 3.

There is a discrepancy here in the suggested method of compositing samples and the frequency of analysis. Obviously, it is correct to composite samples for the total time between analyses rather than making the composition of 24 hours only as suggested on page 2.

b) The suggestion that styrene be checked in the recovery area effluent was made at the meeting. This does not appear in the minutes.

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- c) It was suggested that it would be wise to test for TBC in total effluent in those cases where operators are adding this material to effluent streams. This does not appear in the minutes.

- d) Page 4, last paragraph.

It is important, of course, that the QUANTITY (rather than QUALITY) of flow be determined at the same time that samples are taken for analysis in order to get a true picture of effluent conditions.

- e) Page 7, Section IV, item 2.

The second sentence of this paragraph would be less liable to misconception if it were changed to read; "Since the effluent streams of the Goodrich and Firestone, Port Neches plants are combined and pass out of the plant area in a single stream, data on the total effluent, which will be reported by Goodrich, will concern the effluent of both plants."

- f) No mention is made in the minutes of the discussions which took place at the meeting on the toxicity of TBC. It was stated that TBC in concentrations of one part per billion produced an objectionable taste in potable water after chlorination. It was remarked that this was an extremely small concentration and it would be desirable to obtain further information on the effects of TBC in order to better determine the magnitude of its objectionableness. Such data would define more clearly the particular effluent problem involved where TBC is concerned and indicate to what extent it is necessary to proceed to insure satisfactory disposal of this material.

- g) Page 10, item 5, paragraph 4.

The statement is made that, "It is planned to install API separation at Port Neches." This is incorrect. The information supplied at the meeting was that the Port Neches plant now possesses an API tank which serves to separate any oil or hydrocarbon which may enter the plant effluent before the water is discharged from the plant area.

- h) Page 10, item 6, paragraph 4.

The information supplied here would be clarified and made more complete if it were reworded as follows:

"Goodrich at Louisville and Borger is equipped with effluent ponds where fines can be settled out before discharging the plant effluent.

"Goodrich plants at Louisville, Borger and Port Neches are already coagulating accidentally spilled latex in sumps."

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- 1) Page 11, last paragraph.

The conclusions drawn in this paragraph are subject to misinterpretation since several plants are now well equipped with interceptor surps. There is also some question, at least, concerning what constitutes adequate disposal of TBC and to what pains it is necessary to go in order to keep this material out of all disposal waterways.

s/ W. F. Bixby
.. F. Bixby

FB:mp"

Mr. Bixby recommended that a preliminary draft of minutes of subsequent meetings be submitted to the members of the subcommittee for correction and/or approval before the final draft is made and approved. Mr. Meuser stated that this plan would be followed in the future and he requested that the members review the minutes of the first two meetings and advise if other corrections should be made.

In connection with additions and corrections to the minutes of the first meeting, Mr. Pahl in a letter to the Secretary, December 14, 1944, made the following comments which are made a part of these minutes:

"On page 4 under National Synthetic - Louisville - The paragraph should read, 'They have received no complaints. Their effluent combines with that of the Carbide and Carbon Butadiene Plant and discharges into the Ohio river. The Reactor and Recovery areas discharge through an API separator of approximately 60,000 gallon capacity. They also have a 10,000 gallon concrete pit in the Fines Recovery unit that receives the drainings from the latex Proportioners. Data on their plant effluent, along with other plants in the area, has been collected by the U. S. Public Health Service."

I ENGINEERING

1. Revisions of Brochure No. 1

Copies of Brochure No. 1 (Revised November 20, 1944) prepared by Blaw-Knox Company were distributed to the subcommittee members. This revision contains corrections of the earlier issue by the several copolymer plants, and now includes topographic data and maps of the areas in which the copolymer plants are located.

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Mr. Kopetz reviewed the brochure briefly. He stated that most of the plants have been slow in making their corrections. Mr. Mouser stressed the importance of having all of the information correct and advised the members that all corrections should be sent to Mr. Kopetz, Blaw-Knox Company and that Rubber Reserve should receive only a copy of the letter transmitting the corrections.

The members were reminded of the confidential nature of the material presented in Brochure No. 1 and Blaw-Knox was instructed to mark copies of these reports "confidential".

It was agreed that Blaw-Knox Company should mail the revisions of the brochures directly to the members. Mr. Kopetz recommended that an official mailing list be prepared. At Mr. Mouser's request, the members stated their companies' requirements as to number of copies as follows:

Copolymer Corporation	1
Firestone Tire & Rubber Company	4
General Tire and Rubber Company	2
B. F. Goodrich Company	6
Goodyear Synthetic Rubber Corp.	5
National Synthetic Rubber Corp.	1
U. S. Rubber Company	6
Canadian Synthetic Rubber Ltd.	1
Rubber Reserve Company	6

In discussion of Brochure No. 1, it was agreed that Blaw-Knox should make the sewer lines stand out over the other lines shown on plant layouts in all subsequent revisions.

The presentation of topographical data of plant locations raised a point of discussion that several Rubber Reserve plants are acting together in the solution of the plant effluent problems as evidenced by the action taken by the butadiene, styrene and copolymer plants in Torrance, California, and by the various DPC plants in Louisville, Kentucky. Mr. Flummer outlined the organization of the united action on the part of Louisville plants, with particular reference to dust control. He stated that each plant is represented on a committee of managers and the committee selects periodically a chairman through whom all matters must pass.

The chairman is kept advised of all projects, investigations, improvements, complaints, etc. of each individual plant. By this means, united action of all plants is available in meeting the problems which may be presented to one or more plants separately.

Mr. Mouser stated that after seeing the effluent situation at Baytown, created by the butadiene, butyl, and copolymer operations, that consolidated action should be considered in this area also.

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2. Designing Interceptor Basins

Messrs. Kopetz, Niederhofer, and Werner discussed the various proposals presented in Brochure No. 3 which was distributed to the Subcommittee members and which includes engineering drawings for the location of regional interceptor basins and a final settling basin for each standard 30,000 L.T. plant. The final settling basin is shown in plan, elevation and section. This work was requested during the second meeting of the Subcommittee.

The design of the final basin is based upon 4,500 gpm. for both storm waters and process waters, providing about 45 minutes retention time. The settling basin is divided into two 100,000 gallon settling chambers with facilities for the removal of sludge intermittently and the removal of floatation products by means of suitable skimming devices and hay bays.

A general discussion followed in which Mr. Wendes and others related their present experience with the various existing types of basins and sumps now in service, and the difficulties of keeping them clean.

Mr. Werner stated that the basins were designed so that one side could be operated batchwise while the other side could be operated continuously. Mr. Pahl raised a point that the regional interceptor basin for the polymerization and recovery area appeared to be too large. It was decided to reduce the volume capacity from 30,000 gallons to 15,000 gallons. Mr. Plummer recommended cascade aeration of the plant effluent in the final settling basin. Mr. Meuser and others emphasized the importance of dissolved oxygen in the plant effluent.

The discussions and recommendations of the committee are summarized as follows:

1. That the title of the observation basin at the end of the final settling basin be changed from "Fish Bay" to "Inspection Bay".
2. That Blaw-Knox provide for a flame trap in their design of the wet well of the settling basin.
3. That Blaw-Knox provide for cascade aeration of the final effluent between the pump discharge and the settling basin.
4. That Blaw-Knox show on the print the latex sumps now in use in the process area.
5. That Blaw-Knox redesign the final settling basin to provide slots for two over baffles and one under baffle, if the operators wish to install wooden plank baffles. It was also recommended that off-sets be provided so that covers made may be installed if the operator desires to have the basins covered. It was the consensus of the committee that adequate curbing and pavement should be provided around the tanks to facilitate cleaning.

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6. That Blaw-Knox redesign the final settling basin with platform supports and walk-ways so that the bottom of the tank may be cleaned without having men get into the sludge at the bottom of the tank.
7. That Blaw-Knox redesign the two settling basins of the polymerization and recovery areas to include two 7,500-gallon basins with each basin divided into two parts, giving four compartments, each capable of holding approximately one reactor batch. Mechanical agitation is to be provided to allow proper mixing of coagulant solutions.
8. That Blaw-Knox make an estimate of the cost of installation of all settling basins as presented in Brochure No. 3 for a 30,000, 45,000, 60,000, and 90,000 long ton standard GR-S plant. This was not to include the relocation of sewer lines and special construction, which would be required in certain plants.

After the meeting Mr. Kopetz submitted the following letter indicating the estimated cost for improving the effluent situation in various sized copolymer plants:

"BLAW-KNOX CONSTRUCTION COMPANY
5001 Baum Boulevard
Pittsburgh, Pa.

November 30, 1944

Mr. J. W. Livingston, Vice President
Rubber Reserve Company
Normandy Building
Washington 25, D. C.

Dear Sir:

The estimated cost for engineering, procurement, construction and installation of the effluent clarification system for a standard 30,000 ton co-polymer plant is Eighty Five Thousand Seven Hundred and Sixty-five dollars (\$85,765.00) exclusive of fee. The costs for a 60,000 ton plant and 90,000 ton plant are One Hundred and One Thousand Five Hundred and Fifty Dollars (\$101,550.00) and One Hundred Seventeen Thousand Three Hundred Dollars (\$117,300.00), respectively.

The estimate includes all detailed engineering as specified in Brochure No. 3 for each individual installation. This also

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includes all procurement necessary for the purchase of all equipment and materials required for the clarification system. Construction includes all necessary supervision and labor required for the complete installation of the effluent clarification system.

Items which differ from plant to plant and have not been evaluated are as follows:

1. Rearrangement of underground and surface sewer and drainage lines.
2. Providing of suitable covering for all basins, if required.
3. Electric lighting and fixtures.
4. Additional mechanical equipment if required, such as pumps for the individual basins.

Detailed engineering on this program could be started immediately and field construction would begin three weeks later.

Very truly yours,

BLAW-KNOX CONSTRUCTION CO. PANY

s/ Geo. E. Kopetz
George E. Kopetz
Chief Engineer

cc: Mr. Ludwig Meuser"

3. Recording Flow Indicator and Sampling Device of Final Plant Effluent

The representatives of Blaw-Knox Company distributed Drawing 71-20504-31-2 "Effluent Clarification Typical Flow Measurement and Proportional Sampling Device" as requested by the Subcommittee at its second meeting, October 19, 1944. They reported the estimated cost for equipment installation and excavation to be \$3,500.

Mr. Brown stated that General Tire and Rubber Company had investigated the cost of the installation of a Parshall flume which is similar to that presented on the drawing, and received a quotation of \$3,400.

It was the consensus of the Subcommittee that the proposed installation of Blaw-Knox Company was not necessary for all plants.

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Mr. Bruggemeier moved and Mr. Wendes seconded the motion that the Rubber Reserve Operating Committee give consideration to the installation of the Parshall flume flow measuring device and a suitable continuous sampler at the Baytown and Institute copolymer plants. The data accumulated with these installations will go into the record as representative of the standard copolymer plant operation.

The motion was carried unanimously.

II HYDROQUINONE

Mr. Meuser introduced the problem raised by Mr. Bruggemeier on the toxicity of hydroquinone to marine life. It was reported that 0.5 ppm. or more of hydroquinone will kill fish and that some effluents contain as much as 10 to 20 ppm. of this chemical. Mr. Meuser called attention to the fact that sodium sulfide has been evaluated on a research scale as a shortstop in Report No. CD-28, Copolymer Development Branch, February 17, 1944, "Sodium Sulfide as Shortstopper", by Messrs. H. W. Mazur and L. J. Tierney, U. S. Rubber Company.

A motion was made by Mr. Woerner and seconded by Mr. Watson that the Subcommittee on Plant Effluent recommend to the Operating Committee the evaluation on a production basis of sodium sulfide as a shortstop (as indicated by Report CD-28 U. S. Rubber Company, February 17, 1944) for the replacement of hydroquinone. The object of this proposal is to ultimately substitute, if possible, sodium sulfide for hydroquinone, the presence of which in the plant effluent may result in severe contamination of public waterways with respect to odor and taste in potable waters and toxicity with respect to fish and game in other waters.

The motion was carried unanimously.

III PROGRESS REPORT ON GENERAL RECOMMENDATIONS

The actions to be taken by the plants as recommended by the Subcommittee at its first meeting were reviewed and are summarized as follows:

The seal water program on Wash compressors is approaching completion and the entire program will be completed by February 1, 1945. The following plants have partially completed this work:

Goodrich, Port Neches; Goodyear, Houston; Firestone, Port Neches; and National Synthetic Rubber Corporation, Louisville. All other plants have changed to the seal water system.

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All plants are taking special means to dispose of TBC by seepage, evaporation and burning, or by regulated discharge into the plant effluent.

All plants with the exception of Firestone, Akron; Firestone, Port Neches; and General, Baytown, have diverted oil drips from the sewers.

All plants, with the exception of Goodyear, Torrance; Goodyear, Houston; Copolymer, Baton Rouge, and Canadian Synthetic Rubber Ltd., have made arrangements for the coagulation of accidental spills of latex by chemical addition.

Mr. Meuser reminded the members to be sure that the plant managers have instructed their personnel in the adequate handling of effluents during washing operations and/or spills.

IV ANALYTICAL PROCEDURES

The committee agreed to carry on the analytical program of analysis of plant effluents as closely as possible as outlined in the minutes of the second meeting, PDRS 96, and test methods for copolymer plant effluent. All plants, with the exception of Goodyear, Torrance, and U. S. Rubber, Torrance, which has not reported, have partially completed the plant effluent data program. Canadian Synthetic Rubber Ltd. has collected data for 20 days on the 30-day program.

Mr. Meuser urged the members to have their plants report the analytical data as soon as possible so that preliminary reports may be compiled and distributed.

The Committee voiced the need for analytical procedures for the determination of styrene and para-tertiary butyl catechol. The members were requested to investigate possible procedures for the determination of these chemicals.

Mr. Pahl stated that National Synthetic Rubber Corporation had received bids from two Louisville analysts of \$450 and \$500 for the analysis of samples of plant effluents, as outlined by committee program. He stated, however, that the plant laboratory is doing the work.

Mr. Wilson suggested that BOD determinations be made on the plant effluent. It was agreed that this work would be deferred until the present data were collected and analyzed.

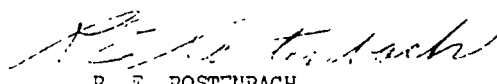
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V REGULATORY BODIES

Mr. Meuser stressed the need for the various plants which have not done so, to collect and report the information on regulatory bodies with reference to plant effluent.

The meeting was adjourned at 4:50 P. M.


R. E. ROSTENBACH
Secretary.

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